Contents of Volume 6

NUMBER 1

Leo Motus 1 Editorial

Contributed Papers

Amos Sorgen and **Hans Holm** 3 A new heuristic approach to the robot free-path problem by stepwise path improvement

James H. Graham, Jian Guan and **Suraj M. Alexander** 21 A hybrid diagnostic system with learning capabilities

V. H. Haase, R. Kalcher and **M. Reiter** 29 EuroCASE CD—a knowledge-based debugger for hardware/software configurations

Yu Qian, Patrick Tessier and **Guy A. Dumont** 39 Process modelling and optimization of systems with imprecise and conflicting equations

M. Dohnal 49 A fractal analysis of symbolic and fuzzy knowledge and its engineering applications

Kuo-Chin Fan and **Chia-Yuan Chang** 57 A region-splitting approach to the segmentation of partially occluded polyhedral objects

Gábor Rédey 65 Conformal text representation

Alok Barua, Samir Ray and **Satyabroto Sinha** 73 TRANSELEX: a knowledge-based approach for the selection of transducers using a dynamic database

Book Reviews

R. Zoppoli 77 *Neural networks: current applications*

Philip Barker 78 *Foundations of artificial intelligence*

Conference Calendar 79

NUMBER 2

Knowledge-Based Applications of Automation

Clarence W. de Silva 87 Preface. Soft automation of industrial processes

Contributed Papers

T. H. Lee, C. C. Hang and **S. Nungam** 91 A knowledge-based approach to real-time predictive process control

Santosh Ananthraman and **Devendra P. Garg** 105 Training backpropagation and CMAC neural networks for control of a SCARA robot

Richard D. Marchbanks and **Mohammad Jamshidi** 117 A fuzzy control approach to a two-axis mirror laser beam alignment system

Grantham K. H. Pang and **T. Ravichandran** 123 Knowledge-based contol of a single-link flexible robot arm

Hong Zhou, Ming Rao and **Karl T. Chuang** 131 Knowledge-based automation for energy conservation and indoor air quality control in HVAC processes

David W. Russell 145 Application of the BOXES methodology to continuous systems

Li-Min Jia and **Xi-Di Zhang** 153 On fuzzy multiobjective optimal control

C. W. de Silva, R. G. Gosine, Q. M. Wu, N. Wickramarachchi and **A. Beatty** 165 Flexible automation of fish processing

Conference Calendar 179

NUMBER 3

Contributed Papers

Carlos Rojas-Guzman and **Mark A. Kramer** 191 Comparison of belief networks and rule-based expert systems for fault diagnosis of chemical processes

Zohreh Fathi, W. Fred Ramirez, A. P. Tavares and **Gerard Gilliland** 203 Symbolic reasoning and quantitative analysis for fault detection and isolation in process plants

Avelino J. Gonzalez, H. R. Myler and **F. D. McKenzie** 219 Representation of process system knowledge through component constraint descriptions

A. L. Stevens, G. B. Grobbelaar, J. N. Ridley and **I. M. MacLeod** 231 A program for handling multiple phases of the design cycle in process control system design

B. Knight and **P. J. Watts** 241 Recovery planning in ASPEX: a state transition model for planning and control of the activated sludge process

Jorge Ulloa, W. F. S. Poehlman and **D. P. Taylor** 249 Knowledge acquisition for an envisioned system (cellular CDMA)

Arvind Srinivasan, Celal Batur and **Chien-Chung Chan** 257 Using inductive learning to determine fuzzy rules for dynamic systems

A. R. Mirzai, A. Higgins and **D. Tsaptsinos** 265 Techniques for the minimisation of multi-layer perceptrons

Book Reviews

L. Siklóssy and **J. Tepandi** 279 *Proceedings of the 10th European Conference on Artificial Intelligence*

Su Shi-Quan, Wang Wen-Hue and **Wang Xing-Yuan** 280 *Common LISP modules: artificial intelligence in the area of neural networks and chaos theory*

M. Kleiber 280 *Intelligent design and manufacturing*

Conference Calendar 283

NUMBER 4

Contributed Papers

C. Kolski, E. Le Strugeon and **M. Tendjaoui** 295 Implementation of AI techniques for "intelligent" interface development

G. Y. Show, Hinny Kong and **W. K. Lin** 307 Intelligent user interface to SQL-based database system

N. R. Jennings, L. Z. Varga, R. P. Aarnts, J. Fuchs and **P. Skarek** 317 Transforming standalone expert systems into a community of cooperating agents

S. Cauvin, B. Braunschweig, P. Galtier and **Y. Glaize** 333 Model-based diagnosis for continuous process supervision: the Alexip experience

Jong Man Lee and **Jin H. Kim** 345 An integration of heuristic and model-based reasoning in fault diagnosis

Ming Rao and **Jean Corbin** 357 Intelligent Operation Support System for batch chemical pulping process

Brief Paper
Wang Mengguang, Liu Zhining and **Yang Zihou** 381 Knowledge representation for problem processing in a decision support system

Book Reviews
Andrew Thomas 387 *Active vision, artificial intelligence*

G. Cembrano 388 *Fuzzy expert systems*

Conference Calendar 389

NUMBER 5

Contributed Papers
Chiaki Kuroda and **Masaru Ishida** 399 A proposal for decentralized cooperative decision-making in chemical batch operation

Sheik Meeran, Michael J. Pratt and **John M. Kay** 409 The use of PROLOG in the automatic recognition of manufacturing features from 2-D drawings

Y. Chon, K. I. Kim and **K. Kim** 425 A knowledge-based system for centrifugal fan blade design

J. G. Rowland and **L. C. Jain** 437 Knowledge-based systems for instrumentation diagnosis, system configuration and circuit and system design

T. S. Arslan, L. Bottaci and **G. E. Taylor** 447 A fault dictionary based expert system for failure diagnosis in a multiple-PCB environment

S. Mitra, P. Basu and **T. K. Ghoshal** 457 Classification and representation of design knowledge for circulating fluidized bed boiler

Samuel Pierre 465 Application of artificial intelligence techniques to computer network topology design

A. T. Gumahad II, N. G. Bourbakis and **C. Koutsouperas** 473 Recognition of typed text characters using a 2-D FT for a letter driven text reading system

Roberto Molinari and **Amro El-Jaroudi** 479 The neural tree classifier: complex decision boundaries with single-layer nets

Book Reviews
Erling A. Woods 485 Fault detection, supervision and safety for technical processes

Mati Littover 485 Artificial intelligence applications in manufacturing

Conference Calendar 489

Call for Papers I

NUMBER 6

Contributed Papers

A. V. Jones and **M. G. Rodd** 499 Problems with expert systems in real-time control

Xin Feng and **Thomas A. Weber** 507 Knowledge Acquisition Advisor (KA^2): an interactive knowledge-acquisition tool for expert system development

C. S. Choy, C. H. Fung and **C. F. Chan** 519 Selection assistant system for gate array user

Alok Barua and **Kedar A. Choudhary** 533 EXSHOF: an artificial intelligence approach to high-order filter synthesis

Thea Ghiselli-Crippa and **Amro El-Jaroudi** 549 A fast neural net training algorithm and its application to speech classification

Deborah F. Cook and **A. Dale Whittaker** 559 Neural-network process modeling of a continuous manufacturing operation

Roger L. King, Michael A. Hicks and **Stephen P. Signer** 565 Using unsupervised learning for feature detection in a coal mine roof

C. L. Karr, S. K. Sharma, W. J. Hatcher and **T. R. Harper** 575 Fuzzy control of an exothermic chemical reaction using genetic algorithms

A. J. Dentsoras and **P. Maurommatis** 583 Knowledge-based mechanical spring selection during preliminary design

Book Reviews

Imre J. Rudas 593 HANDEY: a robot task planner

Boris Tamm 593 Expert systems in mineral and metal processing

S. H. R. Sham 594 Knowledge-representation

Conference Calendar 597

List of Reviewers I